



Industrial Consultancy & Sponsored Research (IC&SR)

Multiple Cone-Air Splitter Based Fan For Uniform Air Distribution IITM Technology Available for Licensing

PROBLEM STATEMENT

- Generally, conventional fans does not provide cool breeze due to the movement & circulation of the air flow creates a 'wind chill' or breeze and, as a result, the user experiences a cooling effect as heat is dissipated through convection and evaporation.
- Further a few prior arts fans are discussed herein with different shape & sizes, however said fans suffers in **high pressure drop, high energy** consumption, generate **noise, vibration** & **space** restriction to accommodate. Hence, there is a need to address said issues in efficient matter.

INTELLECTUAL PROPERTY

IITM IDF Ref. 2027; IN Patent No:493380

TECHNOLOGY CATEGORY/ MARKET

Technology: Multiple Cone-Air Splitter Based Fan;

Industry & Application: Home Appliances, domestic/commercial Fans;

Market: The global Fan market is projected to grow at a **CAGR** of **4.3%** during **2024-2031**.

TRL (TECHNOLOGY READINESS LEVEL)

TRL-4, Proof of Concept ready, tested in lab.

TECHNOLOGY

- The present invention describes a **multiple cone-air splitter based fan device** which provides **consistent flow rate** by distributing the air in a **uniform velocity** & thereby **effectively circulate air** in domestic & commercial environments.
- The multiple cone-air splitter based fan device comprising a **cylindrical housing**, an **axial fan with motor**, a **multiple cone-air splitter unit**, at least **four screw rod locknut**.

IMAGE



FIG.1A

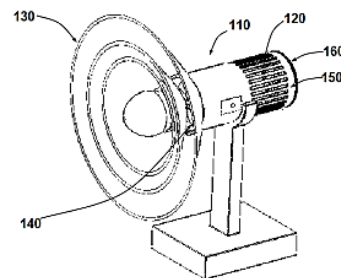


FIG.1B

FIG.1A & 1B: illustrate schematic views of multiple cone air splitter based fan device;

- The cylindrical housing facilitates the **air intake into the fan device**.
- The multiple cone-air splitter unit provides a **consistent flow rate** by distributing the air in a **uniform velocity**.
- A pair of **screw rod locknut** configured with axial fan motor.
- The multiple cone-air splitter unit comprises an **upper cone** that is attached to the cylindrical housing; a **middle cone**; & an **inner cone** that are attached to two base plates of different size with the **help of heel joints** wherein each cone is split into two equal halves & connected by a flexible cloth to provide a **uniform air distribution**.
- In addition to this, the **pair of screw rod locknut** configured with the separate motor is integrated with a gear to adjust the direction of the multiple cone air splitter depending on the required air flow.

RESEARCH LAB

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KEY FEATURES / VALUE PROPOSITION

❖ Technical Perspective:

- The axial fan is driven by (AC/DC) motor, which is **centrally supported** in the housing by means of a **pair of clamps**.
- The multiple cone-air splitter based fan device is an **unique light weight design** that operates with **minimum noise**.
- The device is configured with a **lamp assembly unit** at the **centre of the cone** to provide lightning effect.
- The **multiple cone-air splitter unit** configured with the fan device helps in **covering the blades** of the fan **securely** & providing **uniform air distribution** to circulate air.
- The Multi cone-air splitter-based fan can be **adjusted at different angle** for a **consistent flow rate** with the help of screw lock rod mechanisms.

❖ Industrial Perspective:

- The multiple cone-air splitter-based fan device is a **unique lightweight design** that operates with **minimum noise**.
- Provide **cost effective improved weight-less, compact fan device**.
- May be **redesigned the Fan Shape** based on user requirement like the fan device may be **configured with a centralized air conditioning applications** to provide **uniform air circulation at a consistent velocity**.
- Applicable in **Domestic Appliances/ Commercial Area**.
- Applicable in **Industrial Area** also based on requirements.

IMAGE

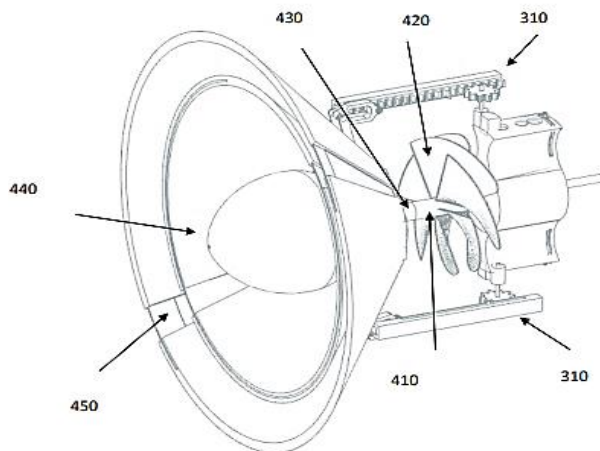


Fig. 2(Above): Illustrates schematic view of the multiple cone-air splitter based fan (ceiling fan device) illustrating clamp for holding the motor 410, clamps 420 for holding the multiple cone-air splitter unit and base plates 430 & 440;

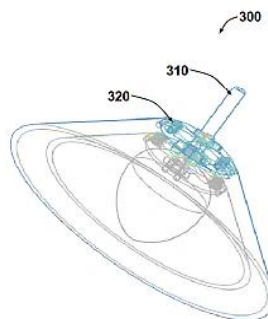


FIG.3(Left): Illustrates the schematic view of the multiple cone-air splitter head both for table top/ceiling fan device/wall mountable fan device 200 showing the support rod 310 and heel joints of the fan

FIG.4(Right): Illustrates the schematic view of the multiple cone-air splitter with screw-rod mechanism;



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